

[Name of Document] Claims

[Claim 1] A line dot recorder comprising a rotary drum having an outer periphery of a sufficient length to mount a printing medium thereon, a drum driving means for rotating said rotary drum, and a recording head provided close to the outer periphery of said rotary drum and having a plurality of recording elements in the form of jet nozzle orifices arranged in lines in the main scanning direction at intervals corresponding to a predetermined pixel density in a proper print area, wherein said rotary drum has an outer periphery of a length which is N (an integer of two or more) times the base length which is the length in the sub-scanning direction of the printing medium and is sufficient to mount and hold N sheets of the printing medium, and said rotary drum is rotated to move the printing medium relative to said recording head in the sub-scanning direction at such a speed over a standard speed that dot recording to pixels of the printing medium of a regular length will be done with a predetermined pixel density at the operating period of said recording head, and dot recording to the pixels is carried out by N -pass printing with N rotations of said rotary drum to form images on the printing medium.

[Claim 2] A line dot recorder as claimed in claim 1 wherein the speed over said standard speed is N times said standard speed in the sub-scanning direction of the printing medium.

[Claim 3] A line dot recorder as claimed in claim 1 or 2 further comprising a head moving means coupled with said recording head for moving said recording head relative to said rotary drum in the main scanning direction and a direction opposite thereto, wherein said recording head is moved relative to said rotary drum to N positions including a base position and the recording elements corresponding to the area to be dot

recorded on the printing medium are operated in each of the positions to form images.

[Claim 4] A line dot recorder as claimed in claim 1 or 2 further comprising a paper supply means for supplying a paper to said rotary drum at a predetermined paper supply position every predetermined revolutions of said rotary drum, a paper mounting/holding means for mounting and holding N sheets of printing medium on said rotary drum, and a paper delivery means for delivering the mounted printing medium at a predetermined paper delivery position every predetermined revolutions of said rotary drum, whereby supplying, mounting, holding and delivering a plurality of printing medium to and from said rotary drum one after another at predetermined timings, and forming uniform-quality images continuously on said plurality of printing medium.

[Claim 5] A line dot recorder as claimed in claim 3 further comprising a paper supply means for supplying a paper to said rotary drum at a predetermined paper supply position every predetermined revolutions of said rotary drum, a paper mounting/holding means for mounting and holding N sheets of printing medium on said rotary drum, and a paper delivery means for delivering the mounted printing medium at a predetermined paper delivery position every predetermined revolutions of said rotary drum, whereby supplying, mounting, holding and delivering a plurality of printing medium to and from said rotary drum one after another at predetermined timings, and forming uniform-quality images continuously on said plurality of printing medium.

[Claim 6] A line dot recorder as claimed in claim 4 or 5 wherein while said plurality of printing medium are supplied, mounted and held, and delivered, dot recording is performed to pixels of N sheets of printing

medium by use of such recording elements that the order of printed images will be the same, whereby images are formed so that the order of printed images on the N sheets of printing medium will be the same.

[Claim 7] A line dot recorder as claimed in claim 4 or 5 wherein while said plurality of printing medium are supplied, mounted and held, and delivered, dot recording is performed to pixels for N sheets of printing medium by use of recording elements of the same nozzles whereby images are formed by the same nozzles for print images on N sheets of printing medium.

[Claim 8] A line dot recorder as claimed in any of claims 3, 5, 6 and 7 wherein in moving said recording head in the main scanning direction and in an opposite direction to N positions including said base position, said recording head is moved and stopped to such positions that distances between any adjacent positions in the maximum moving distance in the main scanning direction will be uniform, and said head moving means is coupled with said recording head so that said recording head can be moved for such a distance that a plurality of print images can be formed.

[Claim 9] A line dot recorder as claimed in any of claims 1, 2, 3, 5, 6, 7 and 8 wherein said recording head has a plurality of recording elements corresponding to pixels in each of said N positions, and said recording elements of even numbers or odd numbers can be operated for dot recording for each of said N positions.

[Claim 10] A line dot recorder as claimed in any of claims 4 to 9 wherein paper supply by said paper supply means and paper delivery by said paper delivery means are carried out to said rotary drum once per $(1 + 1/N)$ rotation of said rotary drum.

[Claim 11] A line dot recorder as claimed in any of claims 1 to 10

wherein said printing medium is a long sheet of a length which is N times the length in the sub-scanning direction of the maximum size paper, and an image of a size which is equal to N times the image formed on said maximum size paper is formed on said long sheet.

[Claim 12] A line dot recorder comprising a rotary drum having an outer periphery of a sufficient length to mount a printing medium thereon, a drum driving means for rotating said rotary drum, and a recording head provided close to the outer periphery of said rotary drum and having a plurality of recording elements in the form of jet nozzle orifices arranged in lines in the main scanning direction at intervals corresponding to a predetermined pixel density in print area to be printed, wherein said rotary drum has an outer periphery of a length which is N (an integer of two or more) times the base length which is the length in the sub-scanning direction of the printing medium and is sufficient to mount N sheets of the printing medium, and dot recording to the pixels is carried out by N-pass printing with N rotations of said rotary drum to form images on the printing medium, and further comprising a paper supply means for supplying a paper to said rotary drum at a predetermined paper supply position, a paper mounting/holding means for mounting and holding N sheets of the printing medium on said rotary drum, and a paper delivery means for delivering the mounted printing medium at a predetermined paper delivery position, and wherein paper supply by said paper supply means and paper delivery by said paper delivery means are carried out to said rotary drum once per $(1 + 1/N)$ rotation of said rotary drum.

[Claim 13] A line dot recorder comprising a drum having a rotating surface on which a sheet of printing paper is mounted, and a line head arranged so as to oppose said rotating surface of said drum and having

recording elements in the form of jet nozzle orifices arranged in lines so as to be perpendicular to the rotating direction of said drum, whereby printing by means of said line head on said printing paper mounted on said drum which is being rotated,

wherein said line head is supported so as to be movable in a direction perpendicular to the rotating direction, and said drum can mount a plurality (N) of sheets of the printing paper on its rotating surface, but (N - 1) sheets of the printing paper are mounted on the rotating surface of said drum to form a blank area where no printing paper is mounted, and by use of said blank area said line head is moved in the perpendicular direction for printing.

[Claim 14] A line dot recorder as claimed in claim 13 wherein said line head comprises a plurality of line heads for each color ink, and said line head for each color comprises a plurality of line head units, and for said each line head for said each color ink or for said each line head unit forming said line head, said line head or said line head unit for each color is moved when it reaches said blank area or a portion adjacent to said blank area where no printing is to be done.

[Claim 15] A line dot recorder as claimed in claim 13 or 14 wherein said drum can mount N sheets of printing paper on its rotating surface and multi-pass printing is done in which printing on one paper is complete by N times of printing, that is, by N rotations of said drum.

[Claim 16] A line dot recorder comprising a drum having a rotating surface on which a sheet of printing paper is mounted, a line head having recording elements in the form of jet nozzle orifices arranged in lines so as to be perpendicular to the rotating direction of said drum, and a tray provided so as to be inserted between said drum and said line head for

cleaning said line head, wherein said tray is provided in parallel with the shaft of said drum and a translating means is provided for inserting said tray between said drum and said line head and pulling out said tray.

[Claim 17] A line dot recorder as claimed in claim 16 wherein an elevating means for moving said line head vertically is provided to expand the distance between said line head and said drum.

[Claim 18] A line dot recorder as claimed in claim 17 wherein said elevating means is a wing having a fulcrum shaft at both sides of which a plurality of line heads are arranged in parallel, said wing being opened and closed around said fulcrum shaft to expand the distance between said drum and said line head.

[Claim 19] A line dot recorder as claimed in any of claims 16 to 18 wherein a suction port is provided at drum side end of said tray, and said suction port is connected to a suction pump to suck ink from the nozzles of said line head.